

## **ABSTRACT**

A multiplexing system is provided for a plurality of sensors disposed in a tank containing a potentially explosive environment and excited from a common excitation circuit outside of the tank through a corresponding plurality of signal lines that penetrate the tank. The multiplexing system comprises: a multiplexer switch for each sensor, each multiplexer switch disposed outside of the tank in series with the corresponding signal line between the common excitation circuit and the corresponding sensor in the tank. Each multiplexer switch comprises: at least one field effect transistor having a current channel connected in series with the corresponding signal line; an isolation circuit; and a drive circuit coupled to the at least one field effect transistor through the isolation circuit for operating the current channel thereof, the isolation circuit electrically isolating the drive circuit from the at least one field effect transistor to limit energy coupled to the corresponding signal line through the at least one field effect transistor to below levels that could initiate an ignition of the potentially explosive environment of the tank. A multiplexing method is also disclosed.